

λ		On Dates.	
388.9	H ζ		All to Mar. 21 inclusive.
389.5		Mar. 17.	Very clear fine line.
390.7		„ 17.	
391.9		„ 17.	
397.0	H ϵ		All dates to Mar. 21 inclusive.
399.6		„ 17.	
406.9		„ 12, 17, 20, 27.	Broad.
410.2	H δ		All dates to Mar. 21 inclusive.
421.6		„ 12.	
434.1	H γ		All dates to Mar. 21 inclusive.
438.5		„ 17.	Edge of H γ .
459.3		„ 17.	Very fine, not strong.
461.4		„ 12, 17.	May be only continuous spectrum.
486.1	H β		All up to Mar. 21 inclusive.

Stonyhurst College Observatory :
1901 October 10.

Observations of *Nova Persei*. By J. E. Gore, M.R.I.A.

I first saw this remarkable object on the evening of 1901 February 22, at 11.40 G.M.T., before I had heard of its discovery elsewhere. It was then much brighter than α *Persei* and seemed to me about equal to *Pollux*, or nearly first magnitude. I have since observed it on every available opportunity, and the following are all my observations to end of 1901 November. The observations were at first made with the naked eye, and afterwards, when the star became fainter, with a binocular.

The following are the comparison stars used in estimating the magnitude of the *Nova*. The magnitudes of the comparison stars are those given in the Revision of the Harvard Photometry. The estimates were made by the method of Argelander :—

Comparison Stars for *Nova Persei*.

Star.	Mag. Revision of H.P.	Star.	Mag. Revision of H.P.
Capella ...	0.24	32 (<i>l</i>) <i>Persei</i> ...	5.13
<i>Pollux</i> ...	1.25	36 <i>Persei</i> ...	5.27
α <i>Persei</i> ...	1.85	30 <i>Persei</i> ...	5.37
β <i>Persei</i> ...	2.31	(<i>b</i>) = D.M. + 44°, 734...	6.50
ϵ <i>Persei</i> ...	2.88	(<i>k</i>) = D.M. + 44°, 757	6.82
δ <i>Persei</i> ...	3.11	„ 759	
ν <i>Persei</i> ...	3.90	(<i>f</i>) = D.M. + 43°, 730...	6.91
κ <i>Persei</i> ...	4.07		

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Observations of Nova Persei.

Date 1901.	Green- wich M.T. h m	Esti- mated Mag.	Notes.
Feb. 22	11 40	1.25	A great new star in Perseus between β Persei and δ Persei; preceding, a little north of ν Persei. Much brighter than α Persei and about equal Pollux.
23	11 25	...	Star still very bright but only seen through passing clouds; magnitude uncertain—seems at least first magnitude.
24	10 45	0.24	Nova seen between clouds; seems fully equal to Capella! Very bright; white with tinge of yellow.
26	10 55	1.05	Nova seen through intervals between fleecy clouds; seems much fainter; about one magnitude below Capella and one magnitude above α Persei; strong moonlight.
27	11 45	1.73	Nova about 1 step brighter than α Persei, much fainter than last night; Nova about same colour as Capella, more reddish than α Persei. Nova evidently fading rapidly. About 4 steps brighter than Algol. (N.B.—Algol <i>not</i> near a minimum.) Strong moonlight, but stars quite clear and easily observed.
Mar. 1	7 40	2.0	Nova about 1 “step” below α Persei, but not much superior to Algol; clear sky in vicinity of Nova; strong moonlight.
	10 38	2.13	Nova about 2 steps less than α Persei.
2	9 10	...	Nova about same brightness as last night but seen through fleecy clouds; estimate a little uncertain; strong moonlight.
	10 5	2.08	Nova $1\frac{1}{2}$ step below α Persei, and $1\frac{1}{2}$ step above Algol; sky clear round these stars. Nova more yellowish than α Persei. Seemed to twinkle a little more than α Persei.
3	8 30	2.45	Nova $3\frac{1}{2}$ steps less than α Persei, and 1 step less than Algol; very clear sky; strong moonlight. Nova has still an orange tinge.
7	7 5	2.88	Nova about equal to ϵ Persei; but strong twilight, observation a little doubtful, but not very.
	9 38	2.82	Nova = ϵ Persei, and Nova $2\frac{1}{2}$ δ Persei; sky clear in vicinity of Nova; Moon low.
8	11 35	3.11	Nova 2 steps below ϵ Persei and about equal to δ Persei; pretty clear in vicinity; moonlight.
12	10 15	3.31	δ Persei 2 Nova 6 ν ; clear sky, no Moon.
13	10 20	...	Nova seems a little fainter than last night, but some clouds about; observation doubtful.
18	11 0	3.90	Nova equal to ν Persei and considerably less than δ Persei; clear sky between passing clouds; no Moon.

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Date 1901.	Green- wich M.T. h m	Esti- mated Mag.	Notes.
Mar. 21	8 55	4.0	Nova about 1 step less than ν Persei, but considerably brighter than 32 (l) Persei with naked eye. Slightly reddish with binocular; might be described as "claret" tint; very clear sky but phosphorescent; no Moon; cold easterly wind.
23	8 15	3.85	Nova 1 step <i>brighter</i> than ν Persei and 2 steps brighter than κ Persei with naked eye and binocular; sky clear from clouds, but air very hazy; crescent Moon.
25	12 5	5.22	(32) 2 (Nova) 3 (30 Persei), with binocular; clear sky, but hazy; moonlight. Nova much fainter than ν or κ Persei.
26	8 40	4.05	Nova 1 step less than ν Persei, with naked eye and binocular; much brighter than 32 Persei. 32 rather more than half a magnitude above 30. Clear sky; moonlight.
	10 55	4.18	Nova 2 steps below ν Persei; sky clear in vicinity of Nova.
27	8 55	3.90	Nova <i>much</i> brighter than 32 Persei and distinctly brighter than last night; about equal to ν Persei, and (Nova) 1 (κ Persei) with naked eye and binocular; clear sky; strong moonlight.
28	9 5	5.13	Nova = 32 (l) Persei, and (Nova) 3 (36 Persei) with binocular; clear sky; strong moonlight; very cold; Nova much fainter than ν and κ Persei.
29	10 25	4.73	Nova considerably less than ν Persei, but 3 steps brighter than 32 (l) Persei. Seen between passing clouds; strong moonlight.
Apr. 1	9 5	4.35	(ν Persei) 3 (Nova) 5 (32 Persei); clear sky; strong moonlight. Nova visible to naked eye.
6	9 10	5.32	(32 Persei) 4 (Nova) 1 (30 Persei), between clouds; estimate uncertain, but Nova certainly below 32; much fainter than ν and κ Persei.
7	8 40	5.37	Nova equal to 30 Persei and distinctly below 32; very clear sky; no moonlight.
	9 50	5.50	Nova <i>just</i> visible to naked eye; 1 step less than 30 Persei; a faint star compared with ν and κ Persei.
8	10 0	4.5 \pm	Nova seen in a very hazy sky; seems brighter than last night, but less than ν Persei; about 4.5 mag., but observation uncertain.
	10 25	4.5 \pm	Nova again seen; about the same as above.
9	8 50	4.59	(ν Persei) 4 (Nova) 3 (32 Persei), and ν 4 Nova 4 (36 Persei); clear sky; no Moon; Nova visible to naked eye.
	9 45	4.61	ν 4 (Nova) 2 (32 Persei), and ν 4 Nova 5 (36 Persei); very clear sky; Nova very visible to naked eye.
11	11 50	5.37	Nova = 30 Persei, and distinctly below 32; clear sky; no Moon; Nova low down, but observation certain.

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Date 1901.	Green- wich M.T. h m	Esti- mated Mag.	Notes.
Apr. 13	9 15	4.25	ν 2 (Nova) 5 (32 Persei); hazy sky, but observation fairly good; no Moon; Nova visible to naked eye.
14	10 ?	5.44	Nova = 30 Persei, or perhaps 1 step less; <i>very</i> clear sky; no Moon.
15	10 15	5.37	Nova = 30 Persei; seen between clouds.
16	9 1	5.50	(30 Persei) 1 (Nova), and Nova considerably less than 32 Persei; clear sky, but hazy and rather bright.
	9 45	5.37	Nova about equal to 30 Persei; very little difference between the two.
18	9 20	4.39	(ν Persei) 4 (Nova) 6 (32 Persei); hazy sky, but observation pretty certain. Nova again increased in brightness; visible to naked eye.
19	8 55	5.33	(32) 5 (Nova) 1 (30 Persei); sky clear, but rather hazy; no Moon; sky rather bright; Nova not visible to naked eye at 9 ^h 30 ^m .
20	9 7	5.50	Nova about 1 step below 30 Persei, but sky very hazy, and thin clouds about; observation uncertain.
21	10 2	5.37?	Nova about equal to 30 Persei, but very hazy sky; observation uncertain.
25	{ 9 55 10 15	{ ... 5½	{ Nova scarcely visible through haze, but seems to be faint; 5½ mag. or less.
27	9 13	4.48	(ν Persei) 4 (Nova) 4½ (32 Persei); pretty clear sky; moonlight.
28	9 45	5.30	Nova faint, about equal to 30 Persei, or 1 step brighter; moonlight and slight haze.
30	9 37	5.37?	Nova faint in the moonlight, and haze and about equal to 30 Persei, but observation uncertain; scarcely visible in binocular.
May 1	9 37	4.5?	Nova barely visible through clouds of smoke, but it seems up again; perhaps 4.5 mag.; less than ν Persei.
	10 20	4.56	Nova brighter than 32, but less than ν Persei; moonlight and haze.
5	1 25	5.50	Nova 1 step below 30 Persei; clear sky; moonlight; star low but fairly well seen; faint, <i>much</i> fainter than ν Persei.
6	10 35	5.5?	Some clouds. Nova seems still faint, about 5½ mag., but uncertain.
July 31	12 35	5.87	(30 Persei) 4 (Nova) 5 <i>b</i> ; clear sky; strong moonlight.
Aug. 6	10 10	5.88	(30 Persei) 5 (Nova) 6 <i>b</i> ; clear sky; good observation.
8	10 20	5.75	(30) 3 Nova 6 <i>b</i> ; sky clear but hazy; good observation.

Date 1901.	Green- wich M.T. h m	Esti- mated Mag.	Notes.
Aug. 10	10 25	6.08	(30) 5 (Nova) 3 <i>b</i> ; clear sky; no Moon; good observation.
15	10 20	6.12	(30) 6 (Nova) 3 <i>b</i> ; clear sky; no Moon.
17	10 25	6.05	(30) 6 (Nova) 4 <i>b</i> ; clear sky; no Moon.
18	10 20	6.12	(30) 6 (Nova) 3 <i>b</i> ; clear sky; no Moon.
19	10 20	6.12	(30) 6 (Nova) 3 <i>b</i> ; pretty clear sky, but unsteady air.
20	10 10	6.08	(30) 5 (Nova) 3 <i>b</i> ; clear sky.
21	10 15	6.21	(30) 6 (Nova) 2 <i>b</i> ; clear sky; moonlight.
22	10 20	6.25	(30) 7 (Nova) 2 <i>b</i> ; clear sky but hazy.
24	10 43	6.45	Nova about equal to <i>b</i> ; hazy sky and moonlight.
25	11 0	6.22	Nova 2 <i>b</i> ; seen between drifting clouds.
26	12 10	6.22	Nova 2 <i>b</i> ; clear sky; moonlight.
27	10 40	6.22	Nova 2 <i>b</i> ; pretty clear; moonlight.
Sept. 4	10 59	6.22	Nova 2 <i>b</i> ; clear; moonlight.
15	9 25	6.50	Nova = <i>b</i> ; night hazy; no Moon.
16	9 25	6.22	Nova 2 <i>b</i> ; pretty clear; no Moon.
	9 58	6.50	Nova = <i>b</i> .
17	8 50	6.50	Nova = <i>b</i> ; clear; no Moon.
20	8 36	6.50	Nova = <i>b</i> ; clear sky; moonlight.
23	8 40	6.50	Nova = <i>b</i> ; hazy sky; moonlight.
24	8 49	6.50	Nova = <i>b</i> ; clear sky; moonlight.
Oct. 2	8 7	6.50	Nova = <i>b</i> ; clear; no Moon.
4	8 5	6.50	Nova = <i>b</i> ; clear but hazy.
9	8 45	6.46	Nova 5 <i>f</i> and Nova 3 κ ; hazy
18	6 55	6.46	Same as last observation.
19	7 25	6.65	Nova 3 <i>f</i> and Nova = κ ; clear; crescent Moon.
31	7 35	6.80	Nova 2 <i>f</i> and κ 1 Nova; clear sky.
	8 0	6.65	Nova 3 <i>f</i> and Nova = κ ; clear, but a little hazy.
Nov. 14	6 47	6.70	Nova 2 <i>f</i> ; hazy sky.
16	6 50	6.86	κ 1, Nova 1 <i>f</i> ; rather hazy.

The Observed Motion and Duration of the Radiant Point of the Perseids. By W. F. Denning.

In recent years a considerable number of observations have been made of the great display of *Perseids* in July and August, and the time seems to have arrived when the results may be usefully summarised. The writer called attention to the motion of the radiant in 1877 August, and reobserved this peculiarity in 1878, 1880, 1885, 1886, 1887, and in several subsequent years. Mr. D. Booth at Leeds obtained some special observations in 1888 and 1891 in examination of this feature, and his figures closely accorded with those previously derived at Bristol (*Observatory*, vol. xi., p. 380).

In tracing the displacement of a radiant it is necessary to keep the observations for each night separate, so that the individual centres for a series of dates may be determined and compared. Before 1893 it appears to have been customary to combine the materials accumulated on several successive or bordering nights, and thus the radiant points, based on such collections, formed diffused positions giving little or no intimation of motion. The necessity of confining the reductions to shorter periods was, however, impressed upon observers, so that in and since the very favourable year 1893 the observations employed in the deduction of the *Perseid* radiant have usually been limited to a single night, and the places determined in this way have proved of much value as evidence in respect of the E.N.E. motion of the shower centre. In the summary which follows I have arranged the radiants observed at Bristol in and since 1874 according to the day of the month on which they were made, and in a separate table have given similar observations by others in and since 1893,* for comparison. It was thought essential to keep the two sets of positions distinct, inasmuch as the Bristol results, if incorporated with the rest, might have unduly influenced the mean values and the deductions based on them. In fact, it seemed safer to arrive at conclusions justified by independent testimony, and to show the degree of mutual corroboration existing between the results derived at Bristol and at other stations. On inspection of the tables this will be seen to be very satisfactory when the nature of the observations is considered. During the last ten years quite a large number of observers have distinguished and followed, as far as conditions permitted, the easterly drift of the radiant, and the rate and direction of the movement have been pretty accurately assigned. As an observational fact this motion cannot be questioned. The writer has long regarded it as one of the most palpable, as well as

* An exception has, however, been made in regard to Mr. Booth's results obtained in 1888 and 1891, as he fixed the place of the radiant from observations on single nights.